1. (currently amended) A method for determining formation fluid pressure in earth formation surrounding a borehole, the borehole defining a borehole wall, the borehole wall covered with mud cake forming a mud cake seal, the method comprising:

providing a tool defining a probe and a variable-volume pretest cavity fluid-coupled to the probe;

pressing ~~a~~ the probe into contact with the mud cake ~~and formation at the borehole wall~~;

expanding the volume of ~~a variable-volume pretest~~ the cavity ~~that is in fluid communication with the probe~~ in sufficient amount to produce a break in the mud cake seal during a draw-down period ~~to break a mud cake seal at the probe~~;

~~terminating expanding the volume of the cavity on~~ holding constant the volume of the cavity immediately after detecting the occurrence of ~~a~~ the break in the mud cake seal, for a sufficient build-up period to establish pressure equilibrium between cavity fluid and formation fluid;

~~allowing a build-up period to establish pressure equilibrium between tool fluid and formation fluid;~~

measuring ~~tool~~ pressure in the cavity; and

setting formation fluid pressure equal to ~~tool~~ measured pressure ~~at pressure equilibrium~~.

2. (currently amended) A method according to claim 1, wherein detecting the ~~a~~ break in the mud cake seal includes measuring ~~tool~~ cavity pressure and detecting an abrupt change associated with ~~tool~~ cavity pressure.

3. (currently amended) A method according to claim 2, wherein detecting the abrupt change includes using a finite moving average (FMA) algorithm on a function of ~~tool~~ cavity pressure.

4. (currently amended) A method according to claim 3, wherein the function of ~~tool~~ cavity pressure includes ~~tool~~ cavity pressure.

5. (currently amended) A method according to claim 3, wherein the function of ~~tool~~ cavity pressure includes a first derivative of ~~tool~~ cavity pressure.

6. (currently amended) A method according to claim 3, wherein the function of tool pressure includes a second derivative of ~~tool~~ cavity pressure.

7. (currently amended) A method according to claim 1, wherein detecting the ~~a~~ break in the mud cake seal includes detecting a difference between a measured ~~tool~~ cavity pressure and a corresponding ~~tool~~ cavity pressure from a reference ~~tool~~ cavity pressure profile.

8. (currently amended) A method according to claim 7, wherein the reference ~~tool~~ cavity pressure profile is measured in a previous drawdown with the cavity isolated from the formation.

9. (original) A method according to claim 1, further comprising:

expanding the volume of the cavity during the draw-down period at a predetermined constant rate.

10. (original) A method according to claim 9, wherein the predetermined constant rate is within the range of 3-160cc/minute.

11. (original) A method according to claim 10, wherein the predetermined constant rate is approximately 5cc/minute.

12. (currently amended) A tool for determining formation fluid pressure in earth formation surrounding a borehole, the borehole defining a borehole wall, the borehole wall covered with mud cake forming a mud cake seal, the tool comprising:

an elongated body adapted for downhole operation;

a probe, extendable from the elongated body, the probe defining an inflow aperture;

a pretest piston pump defining a variable-volume pretest cavity coupled to the inflow aperture;

a) means for expanding the volume of the pretest cavity in sufficient amount to produce a break in the mud cake seal,

b) means for detecting an occurrence of a break in the mud cake seal, and

c) means for holding constant the volume of the cavity immediately after detecting the occurrence of the break in the mud cake seal, for a sufficient build-up period to establish pressure equilibrium between pretest cavity fluid and formation fluid;

and

a pressure sensor coupled to measure pressure in the pretest cavity.

~~a pretest flow line coupling the inflow aperture to the cavity;~~

~~pressure measuring means, pressure coupled to the cavity for measuring tool pressure; and~~

~~electromechanical control means for controlling the volume of the cavity.~~

13. (original) A tool according to claim 12, wherein the control means includes an electromechanically driven roller screw planetary system.

14. (original) A tool according to claim 13, wherein the control means further includes an electrically driven gearbox coupled to drive the roller screw planetary system.

15. (original) A tool according to claim 12, wherein the control means includes downhole programmable control electronics coupled to control the electromechanical control means.

16. (original) A tool according to claim 12, wherein the tool includes a constant-volume flow line.

17. (original) A tool according to claim 16, wherein the constant-volume flow line includes a dedicated probe.

18. (original) A tool according to claim 16, wherein the constant-volume flow line includes a flexible conduit.

19. (original) A tool according to claim 16, wherein the constant-volume flow line has a volume in the range 20 - 120cc.

20. (original) A tool according to claim 12, wherein the probe is located between the pressure measuring means and the variable-volume pretest cavity.

21. (original) A tool according to claim 12, further comprising a sample line coupled to the cavity, and an isolation valve located between the cavity and the sample line.

22. (original) A tool according to claim 12, further comprising an isolation valve located between the cavity and the formation fluid inflow aperture.

23. (original) A tool according to claim 12, wherein said electromechanical control means includes means for terminating expansion of the volume of the cavity on detecting a break in a mud cake seal.